

memorandum

DATE: July 20, 2007

TO: Ira Keltz
Office of Engineering and Technology

FROM: Jane E. Jackson
Associate Chief, Wireless Telecommunications Bureau

SUBJECT: Peer Review of a Report Relied Upon in the draft *Second Report and Order* (WT Docket No. 04-344)

In this memorandum, the Wireless Telecommunications Bureau (WTB) requests a peer review, as discussed herein, of a report relied upon by the Commission in the above-mentioned item.

Background. On July 20, 2006, the Commission adopted a *Report and Order and Further Notice of Proposed Rule Making and Fourth Memorandum Opinion and Order* in WT Docket No. 04-344.¹ In the *Further Notice*, the Commission requested comment, *inter alia*, on whether VHF maritime Channel 87B (161.975 MHz) should be designated exclusively for Automatic Identification Systems (AIS)² in inland VHF Public Coast (VPC) service areas (VPCSAs).³ The Commission noted that the National Telecommunications and Information Administration (NTIA) had argued that Channel 87B should be designated for exclusive AIS use in the inland VPCSAs in order to accommodate satellite AIS operations.⁴ The Commission further noted, however, that the subject of satellite AIS had been raised for the first time in NTIA's comments to the Notice of Proposed Rule Making in this proceeding and that, as a consequence, the record "provide[d] almost no information regarding the technical feasibility,

¹ See Amendment of the Commission's Rules Regarding Maritime Automatic Identification Systems, *Report and Order and Further Notice of Proposed Rule Making and Fourth Memorandum Opinion and Order*, WT Docket No. 04-344 & PR Docket No. 92-257, 21 FCC Rcd 8892 (2006) (*Report and Order*, *Further Notice*, and *Fourth MO&O*, respectively).

² AIS is a "maritime navigation safety communications system standardized by the International Telecommunication Union (ITU) and adopted by the International Maritime Organization (IMO) that provides vessel information, including the vessel's identity, type, position, course, speed, navigational status and other safety-related information automatically to appropriately equipped shore stations, other ships, and aircraft; receives automatically such information from similarly fitted ships; monitors and tracks ships; and exchanges data with shore-based facilities." See 47 C.F.R. § 80.5.

³ In the *Report and Order*, the Commission determined that Channel 87B should be designated for exclusive AIS use in the *maritime* VPCSAs. See *Report and Order*, 21 FCC Rcd at 8904 ¶ 18. For purposes of geographic area licensing in the VPC service, the Commission established nine licensing regions near major waterways, *i.e.*, the maritime VPCSAs, and thirty-three inland licensing regions. See Amendment of the Commission's Rules Concerning Maritime Communications, *Third Report and Order and Memorandum Opinion and Order*, PR Docket No. 92-257, 13 FCC Rcd 19853, 19861-63 ¶¶ 14-16 (1998); 47 C.F.R. § 80.371(c)(1)(ii).

⁴ See *Report and Order*, 21 FCC Rcd at 8929 ¶ 51. ORBCOMM, Inc., the satellite service provider that has contracted with the Coast Guard to develop satellite AIS capabilities, filed reply comments concurring in NTIA's assessment of the need for a nationwide designation to accommodate satellite AIS. *Id.* at 8929 n.264.

effectiveness or potential benefits of satellite AIS, and no studies or analysis of potential interference to or from satellite AIS.”⁵

The Commission therefore requested in the *Further Notice* that commenters provide information regarding satellite AIS and address whether Channel 87B should be designated for exclusive AIS use in the inland VPCSA in order to accommodate satellite AIS.⁶ In response to the *Further Notice*, NTIA and the majority of the other commenters indicated that they favored the designation of Channel 87B for AIS in inland VPCSA both as an accommodation to satellite AIS and for independent reasons. With the exception of MariTEL, Inc. (MariTEL), all of the commenters addressing this issue argued that satellite AIS offers significant advantages over terrestrial AIS by expanding vessel tracking capabilities to encompass areas of the high seas well beyond the reach of non-satellite AIS.⁷ NTIA and the other commenters also argued that the Commission should prohibit non-AIS transmissions on Channel 87B, even in inland areas, in order to avoid disruption to satellite reception of AIS signals. MariTEL disputed both the public interest benefits to be derived from satellite AIS, and the contention that non-AIS transmissions on Channel 87B in inland VPCSA would cause harmful interference to satellite AIS communications.

In support of its argument that the integrity of satellite AIS operations would be impaired unless Channel 87B is designated for exclusive AIS use nationwide, in the inland VPCSA as well as the maritime VPCSA, NTIA submitted a report by the Department of Defense Joint Spectrum Center (JSC) analyzing technical issues relating to satellite AIS (JSC Report).⁸ According to NTIA, the JSC Report demonstrates that non-AIS co-channel signals “cause[] degradation in AIS signal detection ... that is both unpredictable and unmanageable,”⁹ and that this signal degradation “will significantly decrease the effectiveness of the AIS system” to the point of defeating the purpose of using satellite AIS to expand long-range vessel tracking capabilities.¹⁰ In the draft *Second Report and Order*, the Commission would

⁵ *Id.* at 8930 ¶ 52.

⁶ See *Further Notice*, 21 FCC Rcd at 8933-34 ¶ 58. The Commission also invited further comment on the broader issue of whether a nationwide designation of Channel 87B for exclusive AIS use would benefit the public interest, offering commenters an additional opportunity to provide information regarding, for example, “the extent to which vessels on navigable waterways in the inland VPCSA may benefit from AIS on the one hand, and VPC services, including maritime public correspondence services, on the other.” *Id.* at 8934 ¶ 59.

⁷ NTIA explained that land-based AIS facilities provide only line-of-sight coverage, generally limited to no more than 350 nautical miles. However, the Maritime Transportation and Security Act of 2002, 46 U.S.C. § 70115, requires the Coast Guard to develop long-range tracking capabilities, and the Coast Guard’s goal in furtherance of that mandate is to extend AIS coverage to two thousand nautical miles from the United States shoreline. See U.S. General Accountability Office, *Maritime Security: Partnering Could Reduce Federal Costs and Facilitate Implementation of Automatic Vessel Identification System*, Report to the Committee of Commerce, Science, and Transportation, U.S. Senate, at n.16 (GAO-04-868 July 2004) (viewable at <http://www.gao.gov/new.items/d04868.pdf>).

⁸ See “Satellite Detection of Automatic Identification System Messages,” Joint Spectrum Center, Department of Defense (Sept. 19, 2006) (JSC Report). The JSC Report is attached to NTIA’s comments as Exhibit A.

⁹ See NTIA Comments at 6.

¹⁰ *Id.* NTIA explains that the JSC Report “finds that several key technical factors distinguish satellite AIS detection from conventional ship-to-ship and ship-to-shore AIS detection, specifically receiver sensitivity, antenna gain pattern, and reliability requirements. Unlike conventional terrestrial AIS operations that may be able to co-exist with other co-channel transmitters through geographical separation, because the satellite beam covers a very large geographical area, the satellite antenna receives not only AIS ship transmissions, but also non-AIS signals transmitted on the AIS frequency.” *Id.*

rely in part on the JSC Report in support of its determination that a nationwide designation of Channel 87B for AIS is needed to prevent interference to satellite AIS communications, and its decision that the public interest benefits of accommodating satellite AIS provide a rationale, but not the sole rationale, for adopting a nationwide AIS designation of the channel.

Scope of Peer Review Requested. WTB seeks peer review of the assumptions, calculations, and methodology in the JSC Report referenced in the draft *Second Report and Order* in WT Docket 04-344. We request this review to determine whether the assumptions, calculations, methodology, and conclusions therein conform to generally accepted standards in the radio engineering field.

In particular, WTB seeks responses to the following questions with specific suggestions for improvement, if necessary:

1. Do the assumptions contained in the JSC Report conform to generally accepted standards in the radio engineering field?
2. Do the calculations in the JSC Report conform to generally accepted standards in the radio engineering field?
 - a. Are the results accurate?
 - b. If statistical methods are used, are the techniques appropriate for the problem?
 - c. If software is used, is the software appropriate for the problem and current?
3. Does the methodology contained in the JSC Report conform to generally accepted standards in the radio engineering field?
4. Do the conclusions contained in the JSC Report conform to generally accepted standards in the radio engineering field?
5. Are there any revisions, improvements, or extensions the reviewer recommends to ensure that the JSC Report conforms to generally accepted standards in the radio engineering field?

Requested timetable for review. We also ask that you provide a brief written report of your review, findings and recommendations with regard to the JSC Report by August 10, 2007. Thank for your assistance in this matter.

Attachments